

# EXPERIMENT WITH SOUND

(CAMPER COPY)

1. Experiment with the SOUND command. Try the following:

SOUND 0,50,10,6

Change the pitch number (50) to see its effect. Then change the distortion (10) and volume (6) numbers to determine what their purpose is. Use:

SOUND 0,0,0,0

to turn off the sound.

2. Now try this.

SOUND 0,100,10,5  
SOUND 1,150,10,5  
SOUND 2,200,10,5  
SOUND 3,250,10,5

There are four sound registers, numbered 0 - 3, that may be used to make sounds. It may be compared to using four part harmony when singing songs. Each of the registers would be a voice. This is what the four numbers represent.

Register	Pitch	Distortion	Volume
SOUND 0,100,10,5			

The values that can be used in each position are:

Register	0 - 3
Pitch	0 - 255
Distortion	0 - 14 (Even numbers)
Volume	0 - 15

**ANIMATED ARROW**  
(CAMPER COPY)

```
10 REM * ANIMATED ARROW *
20 GRAPHICS 7+16
30 Y=40
40 FOR HUE=0 TO 15
50 FOR X=15 TO 105 STEP 5
60 SETCOLOR 0,HUE,2*X/15
70 REM * DRAW ARROW *
80 COLOR 1
90 GOSUB 10800
100 REM * ERASE ARROW *
110 COLOR 0
120 GOSUB 10800
130 NEXT X
140 NEXT HUE
150 END
10800 REM *****Makes Arrow*****
10810 PLOT X,Y
10815 DRAWTO X-15,Y
10820 DRAWTO X-15,Y+2
10830 DRAWTO X,Y+2
10840 PLOT X+2,Y+1
10850 DRAWTO X-6,Y-3
10860 PLOT X+2,Y+1
10870 DRAWTO X-6,Y+5
10880 RETURN
```

# SOUND ACTIVITIES

(CAMPER COPY)

```
10 FOR PITCH=0 TO 255
20 SOUND 0,PITCH,10,10
30 NEXT PITCH
40 END
```

Add:

```
40 FOR PITCH=255 TO 0 STEP -1
50 SOUND 0,PITCH,10,10
60 NEXT PITCH
70 END
```

and run the program.

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```
100 FOR COUNT=1 TO 3
200 FOR PITCH=1 TO 255
300 POKE 710,P:SOUND 0,P,10,5
400 FOR WAIT=1 TO 5:NEXT WAIT
500 NEXT PITCH
600 NEXT COUNT
```

---

```
10 SOUND 0,81,10,8
20 FOR DELAY=1 TO 300:NEXT D
30 SOUND 0,64,10,8
40 FOR DELAY=1 TO 100:NEXT D
50 SOUND 0,53,10,3
60 FOR DELAY=1 TO 500:NEXT D
70 SOUND 0,64,10,8
```

**SOUND SUBROUTINES**  
(CAMPER COPY)

```
20900 REM *****Ocean*****
20910 FOR LOOP=1 TO 2
20920 FOR PITCH=0 TO 12
20930 SOUND 0,PITCH,8,6
20940 FOR WAIT=1 TO 5:NEXT WAIT
20950 NEXT PITCH
20960 FOR PITCH=12 TO 0 STEP -1
20970 SOUND 0,PITCH,8,4
20975 FOR WAIT=1 TO 17:NEXT WAIT
20980 NEXT PITCH
20985 NEXT LOOP
20990 SOUND 0,0,0,0
20995 RETURN
```

LIST"D:OCEAN.SO"

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```
20300 REM ***Telephone Busy Signal***
20305 FOR RINGS=1 TO 9
20310 SOUND 2,40,6,10
20320 FOR WAIT=1 TO 50:NEXT WAIT
20330 SOUND 2,0,0,0
20340 FOR WAIT=1 TO 25:NEXT WAIT
20350 NEXT RINGS
20360 RETURN
```

LIST"D:BUSY.SO"

**SOUND SUBROUTINES**  
(CAMPER COPY)

```
20500 REM *****Steam Locomotive*****
20510 FOR LOOP=1 TO 25
20520 FOR LOUD=10 TO 0 STEP -1
20530 SOUND 0,15,0,LOUD
20540 NEXT LOUD
20550 NEXT LOOP
20560 SOUND 0,0,0,0
20570 RETURN
```

LIST"D:TRAIN.S0"

---

```
20100 REM *****Chirping Birds*****
20110 FOR LOOP=1 TO 4
20120 FOR COUNT=1 TO 5
20130 FOR PITCH=1 TO 15
20140 SOUND 2,PITCH,10,8
20150 NEXT PITCH
20160 NEXT COUNT
20170 NEXT LOOP
20180 SOUND 2,0,0,0
20190 RETURN
```

LIST"D:BIRDS.S0"

## ADDITIONAL SOUND SUBROUTINES (CAMPER COPY)

### DIRECTIONS

Type in the following subroutines. As you finish each one, store it on your disk using the LIST command and the name given at the end of the listing. Be sure to use the line numbers specified, so that you can include more than one of the subroutines in the same program. Type NEW before you start each sound effect. After storing the sound effect, add a GOSUB and listen to the result.

#### 1. A Siren

```
20000 REM ***** A Siren *****
20010 FOR COUNT=1 TO 20
20020 FOR PITCH=20 TO 50
20030 SOUND 0,PITCH,10,8
20040 NEXT PITCH
20050 NEXT COUNT
20060 SOUND 0,0,0,0
20070 RETURN
```

LIST"D:SIREN.SO"

#### 2. Exploding Bomb

```
20400 REM ***** Exploding Bomb *****
20410 FOR PITCH=30 TO 200
20420 SOUND 0,PITCH,10,8
20430 NEXT PITCH
20440 SOUND 0,80,0,11
20450 FOR WAIT=1 TO 500:NEXT WAIT
20460 SOUND 0,0,0,0
20470 RETURN
```

LIST"D:BOMB.SO"

#### 3. A Bouncing Ball

```
20600 REM ***** Bouncing Ball *****
20610 FOR BOUNCES=1 TO 8
20620 FOR C=1 TO 8
20630 SOUND 0,124,14,4
20640 NEXT C
20650 SOUND 0,0,0,0
20660 FOR WAIT=1 TO 400:NEXT WAIT
20670 NEXT BOUNCES
20680 RETURN
```

LIST"D:BOUNCE.SO"

# ADDITIONAL SOUND SUBROUTINES

(CAMPER COPY)

## 4. A Jackhammer

```
20700 REM ***** Jackhammer *****
20710 FOR HAMMER=1 TO 300
20720 SOUND 0,100,6,4
20730 NEXT HAMMER
20740 SOUND 0,0,0,0
20750 FOR WAIT=1 TO 500:NEXT WAIT
20760 RETURN
```

LIST"D:JAKHAMR.SO"

## 5. Thunder

```
20800 REM ***** Thunder *****
20810 FOR LOOP=1 TO 4
20820 FOR PITCH=1 TO 255
20830 SOUND 0,PITCH,8,15
20840 NEXT PITCH
20850 SOUND 0,0,0,0
20860 FOR WAIT=1 TO 350:NEXT WAIT
20870 NEXT LOOP
20880 RETURN
```

LIST"D:THUNDER.SO"

## 6. Argument Between Parent and Child Computers

```
21000 REM ***** Computer Argument *****
21010 FOR PARENT=1 TO 100
21020 SOUND 0,INT(RND(0)*25),10,8
21030 NEXT PARENT
21040 SOUND 0,0,0,0
21050 FOR WAIT=1 TO 500:NEXT WAIT
21060 FOR CHILD=1 TO 100
21070 SOUND 1,INT(RND(0)*200),10,8
21080 NEXT CHILD
21085 SOUND 1,0,0,0
21090 FOR WAIT=1 TO 200:NEXT WAIT
21095 RETURN
```

LIST"D:ARGUE.SO"

# MUSICAL NOTES

	<u>PITCH</u>	<u>VALUE</u>
	C	60
	B	64
	A or B	68
	A	72
	G or A	76
HIGH	G	81
NOTES	F or G	85
	F	91
	E	96
	D or E	102
	D	108
	C or D	114
MIDDLE	C	121
	B	128
	A or B	136
	A	144
	G or A	153
	G	162
	F or G	173
LOW	F	182
NOTES	E	193
	D or E	204
	D	217
	C or D	230
	C	243